MODIS Team Meeting Minutes

Minutes of the MODIS Team Meeting held on Tuesday September 20, 1994.

Action Items:

91. Clarify the round-robin BRDF measurement requirements. Assigned to Guenther. Due 8/16/94 CLOSED 9/ 9/94

93. Review the Instrument Flight Operations Understanding of 8/26/93. Provide comments by 9/30/94. Assigned to Roberto 8/ 8/94

94. Provide a detailed (high fidelity) analysis of scatter in the scan cavity. The results would determine the need for PF near field scatter measurements vs scan angle. Assigned to Guenther 8/23/94 Preliminary results due 10/15/94. Final due 2/28/95.

95. SBRC & GSFC to team to investigate possible corrections for the spurious response effects in the filters. Assigned to Waluschka 8/23/94. Due 10/25/94

97. Review the SBRC IR&D report on the Indium Bump process and provide comments on acceptability. Assigned to Roberto, Martineau, and Ellis 9/30/94. Due 10/ 4/94

98. Review August schedules and provide a summary of subsystem schedule status. Assigned to Davis, Ferragut, Waluschka, Martineau, Safren, and Daelemans 8/30/94. Due 9/20/94

99. Present a brief (one or two view graph) summary of the instrument status in your subsystem area (based on the QMR). Assigned to Martineau, Waluschka, Davis, Ferragut, Safren/Mocarsky, Gunether/Knight. Due 9/27/94

The following items were distributed:

1) Weekly Status Report #156
2) SBRC Memos submission from week #148
3) Minutes of the previous team meeting

Attendees:

✓ Richard Weber	✓ Bruce Guenther	✓ Larissa Graziani
✓ John Bauernschub	George Daelemans	✓ Bob Martineau
Rosemary Vail	Patricia Weir	✓ Bob Silva
✓ Lisa Shears	✓ Mitch Davis	✓ Robert Kiwak
✓ Mike Roberto	✓ Ken Anderson	✓ Harvey Safren
✓ Nelson Ferragut	✓ Rick Sabatino	✓ Ed Knight
✓ Gene Waluschka	✓ Cherie Congedo	✓ Harry Montgomery
Bill Barnes	✓ Jose Florez	Marvin Maxwell
✓ Les Thompson	✓ Godden	✓ Bill Mocarsky

MODIS Team Technical Weekly September 23, 1994

1. Hughes Reorganization

The reorganization at Hughes was the major news for last week. Within the next 18 months the Systems Division will be closing down and selected personnel will be moving to El Segundo. This reorganization will have a major impact on our SBRC MODIS team.

2. QMR and Splinter Sessions

SBRC provided a short top level technical presentation of the status of MODIS at the technical portion of the QMR which was held on the morning of September 13 at SBRC. GSFC was represented by Ken Anderson, John Barker, George Daelemans, Mitch Davis, Jack Ellis, Nelson Ferragut, Jose Florez, Gerry Godden, Kevin Grady, Larrisa Graziani, Pete Jemerson, David Jones, Ed Knight, Jim Mannion, Bob Martineau, Bill Mocarsky, Harry Montgomery, Mildred Saari, Rick Sabatino, Bob Silva, Roger Stone, Rosemary Vail, Eugene Waluschka, Dick Weber, and Mike Roberto. Topics covered included programmatics, a technical overview, system performance verification, focal planes, and financial.

Most of the two days were devoted to splinter sessions on integration and test, calibration characterization, spacecraft accommodations, focal planes, contamination, and quality assurance.

In addition to the scheduled splinter sessions, there were several informal sessions. A few of these included:

a) There was a meeting to determine the possibility of changing the ordering of the data and the start and stop times for gathering the data. Included among the attendees were Dick Julian, Mitch Davis, Jose Florez, Ed Knight, Fred Gallagher, John Barker, and Mike Roberto. This can be done; but if it is needed, there should be an additional regular mode(s) which would be tested on the ground. Implementation involves the generation of micro code and requires a very detailed understanding of the microprocessors, format engine, and GSE software.

b) There was a meeting on balancing the scan mirror. GSFC was represented by Dick Weber, David Jones, Nelson Ferragut, and Mike Roberto. Included in the attendees from SBRC were Al DeForrest, Walter Balinski, Joe Kleeburg, and Tom Wolverton.

c) Dick Weber, Ken Anderson, Oscar Weinstein, Tom Pagano, Gerry Godden, and Ed Knight met to discuss preparation for the science team. They agreed to circulate view graphs two weeks prior to the science team meeting.

d) There was a tour of the high bay area. The aft optics assembly and detectors have been aligned and integrated with the radiative cooler and brassboard analog electronics module. This hardware is supported by the bench test cooler, integration computers, and integration and alignment collimator (IAC). The afocal telescope was assembled and ready for integration with the aft optics assembly. Other MODIS hardware in the room included the Engineering Model (EM) scan mirror and motor/encoder in a purged environment and the beryllium mainframe.

e) There was a tour of labs where the EM electronics boxes, cabling, and electronics boards, and on-board black body were located. The Main Electronics Module (MEM) was about 80 percent complete. The Space view Analog Module (SAM), Cooler Located Analog Module (CLAM), and Forward view Analog Module (FAM) were in test. The on-board black body was about 50% complete.

A session on the Spacecraft Interface Simulator interface test was held on September 15.

Overall, the sessions went very well. Comments from the GSFC MODIS team are being compiled and a written report will be issued during the last week of September.

3. Tilting of Short/MidWave Intermediate Stage Window

Tom Pagano has concluded that the improvement to the near field response of tipping the intermediate stage window of the radiative cooler does not appear to be worth the expense. This was in an e-mail message dated September 22.

George Daelemans believes there are no thermal issues. Additional power dissipation if the window was tilted is estimated to be in the milliwatts while the intermediate stage handles tens of milliwatts.

Gene Waluschka is taking an independent look at the how significant the ghosting reduction would be if this window is tilted.

4. Transient Response Spec

There was a conversation with Tom Pagano on Sept. 19. Tom would like GSFC to take another look at the stray light spec, paragraphs 3.4.8.2 thru 3.4.8.4 in lieu of the transient response spec. The 21 x 21 IFOV targets could be made 5 x 5. MODIS could possibly meet these specs.

Tom provided the following relating scatter associated with scan mirror surface roughness to scatter due to contamination: the scan mirror now has an rms surface roughness of about 10 Angstroms. A class 300 cleanliness is twice as good as the mirror is now, but a class 500 (estimated for end of life) is a factor of two worse than the scan mirror roughness. The best possible scan mirror would have an rms surface roughness of about 5 Angstroms but would be costly. Tom mentioned that the total integrated scatter from the scan mirror is 0.04%. This compares with commercial mirrors at 0.5% and state of the art of 0.01%.

There were discussions with Bill Barnes on this issue. At this time, Bill does not think we can provide a meaningful typical cloud size to be used in testing the transient response in the lab. He is suggesting that the transient response be measured for each band for a variety of cloud sizes. For example, clouds of 1 km, 15 km, 50 km, and semi-infinite (if larger than 50 km). For each cloud size, it could then be determined how close to the cloud good data could be obtained. In the ground processing, knowledge of the size of each cloud would be used in selecting how close to the cloud good data could be obtained.

The stray light specs do not involve operations in the presence of clouds and are clearly much easier to meet than the transient response spec. MODIS needs to be able to operate in the presence of clouds. However, at this time some relaxation of the transient response specification seems inevitable.

Mike Roberto

September 26, 1994

SEQ NO	DATE	DOC NUMBER	TITLE	ASSIGNED TO
1	20-Jul-94	E152759	PROCEDURE FOR COOLED SPECTRAL BANDS ALIGNMENT	Waluschka
2	21-Mar-94	E151776	SPECIFICATION FOR SHORT WAVE INFRARED MEDIUM INFRARED (SWIR/MWIR) OBJECTIVE ASSEMBLY (REV A)	Waluschka
3	21-May-94	E152858	ASSEMBLY PROCEDURE FOR S/MWIR OBJECTIVE ASSEMBLY	Waluschka
4	08-Apr-94	E151777	SPECIFICATION FOR LONG WAVE INFRARED (LWIR) OBJECTIVE ASSEMBLY (REV A)	Waluschka
5	30-May-94	E152859	ASSEMBLY PROCEDURE FOR LWIR OBJECTIVE ASSEMBLY	Waluschka
6	24-May-94	152,905	SPECIFICATION FOR AFT-OPTICS ASSEMBLY	Waluschka
7	03-Jun-94	E152758	PROCEDURE FOR VIS FOCAL PLANE ASSEMBLY ALIGNMENT	Waluschka
8	31-May-94	E152757	PROCEDURE FOR NIR FOCAL PLANE ASSEMBLY ALIGNMENT	Waluschka
9	27-Apr-94	E152756	TEST PROCEDURE FOR COOLED SPECTRAL BANDS VIGNETTING CHECK (AQI-15)	Waluschka
10	18-Apr-94	E152751	PROCEDURE FOR COOLED SPECTRAL-BANDS EYE-LENS ALIGNMENT (AQI-01)	Waluschka
11	24-Feb-94	E151778	SPECIFICATION FOR DICHROIC ASSEMBLY	Waluschka
12	18-Jan-94	E152752	TEST PROCEDURE FOR DICHROIC ASSEMBLY ALIGNMNET TO AOP (AOI-02)	Waluschka
13	19-May-94	151,780	SPECIFICATION FOR FOCAL PLANE ASSEMBLIES (REV A)	Waluschka
14	21-Dec-93	152,106	TEST PLAN FOR FOCAL PLANE ASSEMBLIES	Waluschka
15	18-Jul-94	152,109	TEST PROCEDURE FOR SENSOR CHIP ASSEMBLY FOCAL PLANE ASSEMBLY (VIS/NIR)	Martineau
16	25-Jul-94	152,108	TEST PROCEDURE FOR SENSOR CHIP ASSEMBLY FOCAL PLANE ASSEMBLY (S/MWIR/LWIR)	Martineau
17	08-Mar-94	152,450	SPECIFICATION FOR MODIS INSTRUMENT VERIFICATION VIBRATION AND LOADS TESTING	Ferragut
18	24-Jun-94	E151779	SPECIFICATION FOR RADIATIVE COOLER MODIS ENGINEERING MODEL (REV A)	Daelemans
19	20-Oct-94	E151773	SPECIFICATION FOR AFT-OPTICS PLATFORM	Ferragut
20	30-Jul-94	E152795	PROCEDURE FOR OBA SPATIAL VERIFICATIONS	Waluschka
21	12-Apr-94	151,772	SPECIFICATION FOR AFOCAL TELESCOPE ASSEMBLY (ATA)	Waluschka
22	12-Apr-94	E152855	AFOCAL TELESCOPE ASSEMBLY PROCEDURE FOR THE ALIGNMENT OF MODIS	Waluschka
23		151,766	SPECIFICATION FOR SCAN MIRROR ASSEMBLY	Ferragut
24	20-Jan-94	151,785	SPECIFICATION FOR MODIS MAIN ELECTRONICS MODULE	Florez
25	29-Apr-94	152,926	INTEGRATION AND TEST PLAN FOR MODIS MAIN ELECTRONICS MODULE	Florez
26	20-Jan-94	151,783	SPECIFICATION FOR MODIS SPACE VIEWING ANALOG ELECTRONICS MODULE	Davis

27	18-Jan-94	151,784	SPECIFICATION FOR MODIS FORWARD VIEWING ANALOG ELECTRONICS MODULE	Davis
28	14-Jan-94	E151786	DESIGN SPECIFICATION FOR MODIS POWER SUPPLY	Davis
29	27-Jun-94	E152092	PROCEDURE FOR EM RADIATIVE COOLER ASSEMBLY MODIS VIBRATION TEST	Ferragut
30	13-Jun-94	E152093	PROCEDURE FOR THERMAL VACUUM TESTING RADIATIVE COOLER MODIS	Daelemans
31	12-May-94	E152095	PROCEDURE FOR BENCH TESTING WARM AND COLD RADIATIVE COOLER	Daelemans
32		E151765	SPECIFICATION FOR MAINFRAME MODIS STRUCTURAL ENGINEERING MODEL	Ferragut
33	12-Jul-94	E152110	TEST PROCEDURE FOR THE MODIS STRUCTURAL MODEL VIBRATION ACCELERATION AND TEMPERATURE (REV C)	Ferragut
34	09-Aug-94	151,771	GENERAL SPECIFICATION FOR OPTICAL SYSTEM PERFORMANCE REQUIREMENTS	Waluschka
35	09-Feb-94	E151774	SPECIFICATION FOR VISIBLE (VIS) OBJECTIVE ASSEMBLY	Waluschka
36	08-Feb-94	E152856	THE ALIGNMENT OF VISIBLE OBJECTIVE ASSEMBLY PROCEDURE FOR	Waluschka
37	09-Feb-94	E151775	SPECIFICATION FOR NEAR INFRARED (NIR) OBJECTIVE ASSEMBLY (REV A)	Waluschka
38	24-Feb-94	E152857	PROCUREMENT FOR THE ALIGNMENT OF OBJECTIVE ASSEMBLY NEAR-INFRARED	Waluschka